**WHAT IS CLAIMED IS:**

1. A computer implemented method of processing image data for use in holographic stereograms:

providing a plurality of image data sets;

loading at least one of the plurality of image data sets into a memory, wherein the at least one of the plurality of image data sets is organized as an image block matrix;

transposing the image block matrix to form a transposed imaged block matrix;

replacing a portion of the transposed image block matrix with a portion of a second transposed image block matrix to form a resulting image block matrix; and

transposing the resulting image block matrix to form a hologram element (hogel) portion matrix.

2. The computer-implemented method of claim 1 wherein the providing a plurality of image data sets further comprises:

providing a computer graphics model of a scene;

generating a plurality of sets of light-field data from the computer graphics model of a scene using an isotropic parameterization of a light field, each of the plurality of sets of light-field data corresponding to a respective one of the plurality of image data sets.

3. The computer-implemented method of claim 2 wherein the generating further comprises at least one of one of scan-line conversion, ray tracing, and image-based rendering.

4. The computer-implemented method of claim 2 further comprising:

defining a plurality of sampling directions; and

wherein the generating a plurality of sets of light-field data further comprises generating a plurality of parallel oblique projections using at least one of the plurality of sampling directions.

5. The computer-implemented method of claim 2 wherein the isotropic parameterization of a light field is a direction-and-point parameterization of a light field.

6. The computer-implemented method of claim 1 wherein the providing a plurality of image data sets further comprises:

providing a computer graphics model of a scene;

rendering a plurality of oblique projections of the computer graphics model of a scene using at least one of scan-line conversion, ray tracing, and image-based rendering, each of the plurality of oblique projections corresponding to a respective one of the plurality of image data sets.

7. The computer-implemented method of claim 1 wherein each of the plurality of image data sets corresponds to an oblique projection of a computer graphics model of a scene.

8. The computer-implemented method of claim 1 wherein each of the plurality of image data sets includes a plurality of pixel values, each of the plurality of pixel values corresponding to a respective hogel to be printed in a hologram tile.

9. The computer-implemented method of claim 1 wherein each of the plurality of image data sets includes at least one of horizontal parallax only (HPO) data and full parallax data.

10. The computer-implemented method of claim 1 wherein the image block matrix includes a plurality of rows, each of the plurality of rows corresponding to a respective one of the plurality of image data sets.

11. The computer-implemented method of claim 1 wherein the second transposed image block matrix is formed by:

providing a second plurality of image data sets;

loading at least one of the second plurality of image data sets into a second memory, wherein the at least one of the second plurality of image data sets is organized as a second image block matrix; and

transposing the second image block matrix to form the second transposed imaged block matrix.

12. The computer-implemented method of claim 11 wherein:
the loading at least one of the plurality of image data sets into a memory, and the transposing the image block matrix are performed in a first computer system; and
the loading at least one of the second plurality of image data sets into a second memory, and the transposing the second image block matrix are performed in a second computer system coupled to the first computer system.

13. The computer-implemented method of claim 11 wherein:
the loading at least one of the plurality of image data sets into a memory, and the transposing the image block matrix are performed in a first processor of a computer system; and
the loading at least one of the second plurality of image data sets into a second memory, and the transposing the second image block matrix are performed in a second processor of the computer system.

14. The computer-implemented method of claim 11 wherein:
the loading at least one of the plurality of image data sets into a memory, and the transposing the image block matrix are performed by a first process in a processor of a computer system; and
the loading at least one of the second plurality of image data sets into a second memory, and the transposing the second image block matrix are performed by a second process in the processor of the computer system.

15. The computer-implemented method of claim 11 further comprising:
replacing a second portion of the second transposed image block matrix with a second portion of the transposed image block matrix to form a second resulting image block matrix.

16. The computer-implemented method of claim 1 wherein the replacing a portion of the transposed image block matrix with a portion of a second transposed image block matrix is performed by a multi-process two-dimensional matrix transpose operation.

17. The computer-implemented method of claim 16 wherein the multi-process two-dimensional matrix transpose operation is one of an AllToAll operation, an AllToAllV operation, and an AllToAllW operation, as defined by the Message Passing Interface 2 (MPI-2) standard.

18. The computer-implemented method of claim 1 further comprising:

storing the hogel portion matrix in at least one file on a storage medium, the storage medium being one of a magnetic storage medium, an electronic storage medium, and an optical storage medium.

19. The computer-implemented method of claim 18 further comprising:

reading data from the hogel portion matrix stored in the at least on file; and

writing, in a predetermined order, at least one hogel to one of the storage medium, a second storage medium, and a hologram printer.

20. The computer-implemented method of claim 19 further comprising adjusting a view angle associated with the at least one hogel.

21. The computer-implemented method of claim 20 wherein the adjusting further comprises scaling the at least one hogel by one of adding data and removing data.

22. The computer-implemented method of claim 19 further comprising adjusting a view zone associated with the at least one hogel.

23. The computer-implemented method of claim 22 wherein the adjusting further comprises translating at least one pixel of the at least one hogel.

24. The computer-implemented method of claim 19 further comprising:

performing at least one of an anti-aliasing operation, a rotation operation, a directional interpolation operation, a compression operation and a compositing operation on the at least one hogel.

25. The computer-implemented method of claim 1 further comprising repeating the loading at least one of the plurality of image data sets into a memory, the transposing the image block matrix to form a transposed imaged block matrix, the replacing a portion of the transposed image block matrix with a portion of a second transposed image block matrix to form a resulting image block matrix, and the transposing the resulting image block matrix to form a hogel portion matrix.

26. The computer-implemented method of claim 1 encoded in a computer readable medium as instructions executable on a processor, the computer readable medium being one of an electronic storage medium, a magnetic storage medium, an optical storage medium, and a communications medium conveying signals encoding the instructions.

27. The computer-implemented method of claim 1 further comprising:
collecting image data statistics by analyzing at least one of:
the at least one of the plurality of image data sets;
the image block matrix;
the transposed image block matrix;
the resulting image block matrix; and
the hogel portion matrix.

28. The computer-implemented method of claim 27 wherein the image data statistics include at least one of average image intensity and average hogel intensity.

29. The computer-implemented method of claim 1 further comprising adjusting a view angle associated with the hogel portion matrix.

30. The computer-implemented method of claim 29 wherein the adjusting further comprises scaling the hogel portion matrix by one of adding data and removing data.

31. The computer-implemented method of claim 1 further comprising adjusting a view zone associated with the hogel portion matrix.

32. The computer-implemented method of claim 31 wherein the adjusting further comprises translating at least one pixel of the hogel portion matrix.

33. The computer-implemented method of claim 1 further comprising:
performing at least one of an anti-aliasing operation, a rotation operation, a directional interpolation operation, a compression operation, and a compositing operation on the hogel portion matrix.

34. The computer-implemented method of claim 1 further comprising:
downsampling data in the image block matrix to thereby reduce an amount of data present in the image block matrix.

35. An apparatus comprising:
a processor;
a storage medium coupled to the processor and including a plurality of image data sets;
a memory coupled to the processor; and
a computer program for processing image data for use in holographic stereograms, the program being at least partially storable in the memory, and executable on the processor, the program including:
an image data loading routine for loading at least one of the plurality of image data sets into the memory, wherein the at least one of the plurality of image data sets is organized as an image block matrix;
a first transposing routine for transposing the image block matrix to form a transposed imaged block matrix;
a data replacement routine for replacing a portion of the transposed image block matrix with a portion of a second transposed image block matrix to form a resulting image block matrix; and
a second transposing routine for transposing the resulting image block matrix to form a hologram element (hogel) portion matrix.

36. The apparatus of claim 35 wherein the plurality of image data sets on the storage medium are formed by generating a plurality of sets of light-field data from a computer graphics model of a scene using an isotropic parameterization of a light field, each of the plurality of sets of light-field data corresponding to a respective one of the plurality of image data sets

37. The apparatus of claim 35 wherein the plurality of image data sets on the storage medium are formed by rendering a plurality of oblique projections of a computer graphics model of a scene using at least one of scan-line conversion, ray tracing, and image-based rendering, each of the plurality of oblique projections corresponding to a respective one of the plurality of image data sets.

38. The apparatus of claim 35 wherein each of the plurality of image data sets on the storage medium corresponds to an oblique projection of a computer graphics model of a scene.

39. The apparatus of claim 35 wherein each of the plurality of image data sets includes a plurality of pixel values, each of the plurality of pixel values corresponding to a respective hogel to be printed in a hologram tile.

40. The apparatus of claim 35 wherein the image block matrix includes a plurality of rows, each of the plurality of rows corresponding to a respective one of the plurality of image data sets.

41. The apparatus of 35 further comprising:

a second processor;

a second storage medium coupled to the processor and including a second plurality of image data sets;

a second memory coupled to the second processor; and

a second computer program for processing image data for use in holographic stereograms, the second program being at least partially storable in the second memory, and executable on the second processor, the second computer program including:

an image data loading routine for loading at least one of the second plurality of image data sets into the second memory, wherein

the at least one of the second plurality of image data sets is organized as a second image block matrix;

a first transposing routine for transposing the second image block matrix to form the second transposed imaged block matrix;

a data replacement routine for replacing a second portion of the second transposed image block matrix with a second portion of the transposed image block matrix to form a second resulting image block matrix; and

a second transposing routine for transposing the second resulting image block matrix to form a second hologram element (hogel) portion matrix.

42. The apparatus of claim 41 wherein:

the processor, storage medium, and memory comprise a first computer system; and

the second processor, second storage medium, and second memory comprise a second computer system, the first computer system being coupled to the second computer system.

43. The apparatus of claim 42 further comprising:

a first network interface coupled to the processor;

a second network interface coupled to the second processor, wherein the first network interface is coupled to the second network interface via a network.

44. The apparatus of claim 41 wherein:

the processor, second processor, storage medium, second storage medium, memory, and second memory comprise a computer system.

45. The apparatus of claim 44 wherein the storage medium includes the second storage medium.

46. The apparatus of claim 44 wherein the memory includes the second memory.

47. The apparatus of claim 35 wherein the data replacement routine comprises a multi-process two-dimensional matrix transpose operation.

48. The apparatus of claim 35 wherein the multi-process two-dimensional matrix transpose operation is one of an AllToAll operation, an AllToAllV operation, and an AllToAllW operation, as defined by the Message Passing Interface 2 (MPI-2) standard.

49. The apparatus of claim 35 wherein the computer program further comprises:

a storing routine for storing the hogel portion matrix in at least one file on the storage medium, the storage medium being one of a magnetic storage medium, an electronic storage medium, and an optical storage medium.

50. A computer implemented method of processing image data for use in holographic stereograms:

providing a plurality of image data sets;

loading at least a portion of one of the plurality of image data sets into a memory, the at least a portion of one of the plurality of image data sets including a plurality of pixel values;

copying a first one of the plurality of pixel values from the at least a portion of one of the plurality of image data sets to a first hogel portion in a hogel buffer in the memory;

copying a second one of the plurality of pixel values from the at least a portion of one of the plurality of image data sets to a second hogel portion in the hogel buffer in the memory;

51. The computer-implemented method of claim 50 wherein the providing a plurality of image data sets further comprises:

providing a computer graphics model of a scene;

generating a plurality of sets of light-field data from the computer graphics model of a scene using an isotropic parameterization of a light field, each of the plurality of sets of light-field data corresponding to a respective one of the plurality of image data sets.

52. The computer-implemented method of claim 51 wherein the generating further comprises at least one of one of scan-line conversion, ray tracing, and image-based rendering.

53. The computer-implemented method of claim 51 further comprising:
defining a plurality of sampling directions; and
wherein the generating a plurality of sets of light-field data further comprises
generating a plurality of parallel oblique projections using at least one of the plurality of sampling directions.

54. The computer-implemented method of claim 51 wherein the isotropic parameterization of a light field is a direction-and-point parameterization of a light field.

55. The computer-implemented method of claim 50 wherein the providing a plurality of image data sets further comprises:
providing a computer graphics model of a scene;
rendering a plurality of oblique projections of the computer graphics model of a scene using at least one of scan-line conversion, ray tracing, and image-based rendering, each of the plurality of oblique projections corresponding to a respective one of the plurality of image data sets.

56. The computer-implemented method of claim 50 wherein each of the plurality of image data sets corresponds to an oblique projection of a computer graphics model of a scene.

57. The computer-implemented method of claim 50 wherein each of the plurality of pixel values corresponds to a respective hogel to be printed in a hologram tile.

58. The computer-implemented method of claim 50 further comprising:
repeating the copying steps for successive ones of the plurality of pixel values.

59. The computer-implemented method of claim 50 further comprising:
storing the first hogel portion to a storage medium.

60. The computer-implemented method of claim 50 wherein the memory is at least partially aligned to sectors of a storage medium.

61. The computer-implemented method of claim 50 further comprising:

pre-processing the at least a portion of one of the plurality of image data sets subsequent to loading the at least a portion of one of the plurality of image data sets.

62. The computer-implemented method of claim 50 further comprising:

post-processing the first hogel portion subsequent to the copying of the first one of the plurality of pixel values.

63. The computer-implemented method of claim 50 encoded in a computer readable medium as instructions executable on a processor, the computer readable medium being one of an electronic storage medium, a magnetic storage medium, an optical storage medium, and a communications medium conveying signals encoding the instructions.